

NIA Project Registration and PEA Document

Date of Submission

Dec 2013

Project Reference

NIA_WWU_009

Project Registration

Project Title

Investment Prioritisation in Distribution Systems

Project Reference

NIA_WWU_009

Project Licensee(s)

Wales & West Utilities

Project Start

December 2013

Project Duration

2 years and 0 months

Nominated Project Contact(s)

Ian Marshall (Green Gas Development Manager)

Project Budget

£426,240.00

Summary

This project will consider investment planning and prioritisation of mains replacement within the gas distribution network, taking into consideration the approaches adopted by the UK water industry for water distribution networks.

Investment planning is the development of plans to deliver stable or improving levels of service to customers at appropriate levels of expenditure and efficient allocation of resources. These plans are justified to the Regulators on the basis of current and future risk of service failure.

Prioritisation of mains replacement is based on the implementation of investment plans to provide the required levels of service at least cost over the long term.

Nominated Contact Email Address(es)

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Problem Being Solved

The gas distribution sector has a well-developed risk-based approach to prioritising iron mains replacement expenditure, accepted by the Health and Safety Executive as a robust method of reducing societal risk. A revised 'three-tier' approach introduced as a key element of this price control period (from April 2013) allows greater flexibility and potential optimisation of replacement scheme

design through incorporation of condition, environmental impact (leakage) and customer service metrics, subject to overall network risk reduction targets being met.

This multi-criterion risk-based planning approach to investment planning has been adopted by the UK water industry which has not historically been dominated to the same extent by safety considerations. As a result the water industry already considers a broader suite of risks by following the Capital Maintenance Planning Common Framework (CMPCF). This risk-based framework for asset management planning has been used in the water industry for the last three Periodic Reviews (PR) in 2004, 2009 and 2014 (PR04, PR09 and P14 respectively) and identified as best practice.

Method(s)

The two industries' networks have much in common in terms of material types, location and external influencing factors on asset performance and deterioration. With the potential opportunity to out-perform cost allowances through optimised planning in this price control period (and following the PR14 settlement in the water sector), there is an opportunity to benchmark and transfer good practice and approaches to investment planning and prioritisation. Such revised approaches are of strategic interest also as gas distribution companies face a potential change to the Pipeline Safety Regulations in the next few years.

A research programme will be undertaken which considers investment planning approaches, recommends transferable approaches and implements these approaches through the development of a proof-of-concept decision support tool (DST). The approach taken will be to:

- Detail distribution mains investment prioritisation approaches in the water sector and the gas sector, with transferable approaches recommended for further consideration.
- Define the requirements for investment planning and prioritisation of mains replacement in the gas sector through engagement with individual gas distribution companies.
- Subject to the identification of suitable methods, develop a company-specific implementation plan to include the selection of trial catchment areas for future testing.

Develop and demonstrate a DST incorporating recommended alternative approaches to investment planning and prioritisation of mains replacement.

Scope

This project will consider investment planning and prioritisation of mains replacement within the gas distribution network, taking into consideration the approaches adopted by the UK water industry for water distribution networks.

Investment planning is the development of plans to deliver stable or improving levels of service to customers at appropriate levels of expenditure and efficient allocation of resources. These plans are justified to the Regulators on the basis of current and future risk of service failure.

Prioritisation of mains replacement is based on the implementation of investment plans to provide the required levels of service at least cost over the long term.

Objective(s)

This project will identify and recommend transferable approaches to investment planning and prioritisation of mains replacement between the water and gas distribution sectors. The specific objectives are to:

- Identify transferable methods of investment planning which incorporate multi criteria risk-based approaches;
- Present a robust decision support procedure which helps to deliver a more cost-effective investment plan whilst still meeting safety risk reduction obligations; and
- Identify additional risk assessment methods to plan and prioritise investment.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

Following this research the gas distribution companies should collectively be able to:

- Steer the future of investment planning practice for the gas sector;

- Improve efficiency and effectiveness of mains replacement schemes; and
- Gain knowledge and experience of tried and tested approaches for investment planning based on service failure risk.

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

Task 1: Summarise Water Industry Investment Planning Approaches; Identify the approaches areas that have potential for transfer to the gas industry.

Task 2: Document Gas Industry Investment Planning Approaches; to have a complete picture of current practices and enable a full comparison of approaches between the gas and water industry. This task will also include a review of data that are currently available to support investment planning.

Task 3: Produce Gas Sector Investment Prioritisation Needs Statement.

STAGE GATE

Task 4: Develop Decision Support Procedure Requirement Specification; to define the components of a DSP that will be sufficient to assess if candidate transferable approaches would add value to gas network investment planning.

Task 5: Develop a proof-of-concept DSP

Task 6: Apply the DSP to selected company network areas; to allow comparison between existing and proposed approaches to identify the magnitude of any potential savings.

Task 7: Review DSP trial. Develop implementation plan to determine where there is sufficient value in applying water industry style multi-criterion investment planning in gas networks. The findings will be summarised and individual implementation plans developed in consultation with each participant.

Technology Readiness at Start

TRL3 Proof of Concept

Technology Readiness at End

TRL5 Pilot Scale

Geographical Area

Workshops and visits will take place with all participating gas distribution companies.

Interviews will be held with a number of UK water companies and their consultants (if required) (number and location to be determined based on time and availability).

Steering committee meetings will be held at either ENA London or WRc offices in Swindon.

Revenue Allowed for the RII Settlement

There are no direct saving benefits anticipated.

Indicative Total NIA Project Expenditure

The total recoverable allowance will be 90% of the project costs shown below for each Licensee under the Network Innovation Allowance (NIA):

WWU

External expenditure - £40,000

Internal expenditure - £13,280

Total WWU expenditure - £53,280

NGG

External expenditure - £160,000

Internal expenditure - £53,120

Total NGG expenditure - £213,120

NGN

External expenditure - £40,000

Internal expenditure - £13,280

Total NGN expenditure - £53,280

SGN

External expenditure - £80,000

Internal expenditure - £26,560

Total SGN expenditure - £106,560

Total NIA expenditure – £426,240

Project Eligibility Assessment Part 1

There are slightly differing requirements for RIIO-1 and RIIO-2 NIA projects. This is noted in each case, with the requirement numbers listed for both where they differ (shown as RIIO-2 / RIIO-1).

Requirement 1

Facilitate the energy system transition and/or benefit consumers in vulnerable situations (Please complete sections 3.1.1 and 3.1.2 for RIIO-2 projects only)

Please answer **at least one** of the following:

How the Project has the potential to facilitate the energy system transition:

n/a

How the Project has potential to benefit consumer in vulnerable situations:

n/a

Requirement 2 / 2b

Has the potential to deliver net benefits to consumers

Project must have the potential to deliver a Solution that delivers a net benefit to consumers of the Gas Transporter and/or Electricity Transmission or Electricity Distribution licensee, as the context requires. This could include delivering a Solution at a lower cost than the most efficient Method currently in use on the GB Gas Transportation System, the Gas Transporter's and/or Electricity Transmission or Electricity Distribution licensee's network, or wider benefits, such as social or environmental.

Please provide an estimate of the saving if the Problem is solved (RIIO-1 projects only)

If successful, an improved planning and prioritisation process could be expected to deliver around 0.5 - 1% improvement in combined replacement and repair costs (approx £840m and £100m total respectively) yielding annual benefits of between £4.7 to £9.4m per annum in aggregate across all GDNs.

Please provide a calculation of the expected benefits the Solution

To be updated as the project progresses through the TRL levels

Please provide an estimate of how replicable the Method is across GB

The improved process for planning and prioritization would be deployed corporately and would therefore provide impact GB-wide.

Please provide an outline of the costs of rolling out the Method across GB.

The project will deliver a proof of concept Decision Support Procedure. To deliver an integrated system will require investment in productisation and systems integration.

Requirement 3 / 1

Involve Research, Development or Demonstration

A RIIO-1 NIA Project must have the potential to have a Direct Impact on a Network Licensee's network or the operations of the System Operator and involve the Research, Development, or Demonstration of at least one of the following (please tick which applies):

- A specific piece of new (i.e. unproven in GB, or where a method has been trialled outside GB the Network Licensee must justify repeating it as part of a project) equipment (including control and communications system software).
- A specific novel arrangement or application of existing licensee equipment (including control and/or communications systems and/or software)
- A specific novel operational practice directly related to the operation of the Network Licensees system
- A specific novel commercial arrangement

RIIO-2 Projects

- A specific piece of new equipment (including monitoring, control and communications systems and software)
- A specific piece of new technology (including analysis and modelling systems or software), in relation to which the Method is unproven
- A new methodology (including the identification of specific new procedures or techniques used to identify, select, process, and analyse information)
- A specific novel arrangement or application of existing gas transportation, electricity transmission or electricity distribution equipment, technology or methodology
- A specific novel operational practice directly related to the operation of the GB Gas Transportation System, electricity transmission or electricity distribution
- A specific novel commercial arrangement

Specific Requirements 4 / 2a

Please explain how the learning that will be generated could be used by the relevant Network Licensees

n/a

Or, please describe what specific challenge identified in the Network Licensee's innovation strategy that is being addressed by the project (RIIO-1 only)

n/a

- Has the Potential to Develop Learning That Can be Applied by all Relevant Network Licensees

Is the default IPR position being applied?

- Yes

Project Eligibility Assessment Part 2

Not lead to unnecessary duplication

A Project must not lead to unnecessary duplication of any other Project, including but not limited to IFI, LCNF, NIA, NIC or SIF projects already registered, being carried out or completed.

Please demonstrate below that no unnecessary duplication will occur as a result of the Project.

n/a

If applicable, justify why you are undertaking a Project similar to those being carried out by any other Network Licensees.

n/a

Additional Governance And Document Upload

Please identify why the project is innovative and has not been tried before

n/a

Relevant Foreground IPR

n/a

Data Access Details

n/a

Please identify why the Network Licensees will not fund the project as apart of it's business and usual activities

n/a

Please identify why the project can only be undertaken with the support of the NIA, including reference to

the specific risks(e.g. commercial, technical, operational or regulatory) associated with the project

n/a

This project has been approved by a senior member of staff

Yes